

Renville H. McMann  
963 Oenoke Ridge  
New Canaan, CT 06840

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PSWP1 & WP2-080

TO: J. Flaherty, Chairman - Planning Subcommittee (PS)  
FM: R. McMann, Chairman - PS Working Party 1 (PS/WP1)  
DT: 30 November 1990  
RE: Chairman's Report for ACATS Interim Report #4 from PS/WP1 and PS/WP2.

PS/WP1 (Working Party on ATS Technology Attributes and Assessments) and PS/WP2 (Working Party on ATS Testing and Evaluation Specification) were reconvened at the request of the Planning Subcommittee Chairman.

You should note that this report covers the activities of both PS/WP1 and PS/WP2, as the two committees met jointly throughout this reporting period.

PS/WP1 and PS/WP2 were reconvened to address the following:

- 1) the need to supplement the testing of audio channels in the digital domain and objective testing of audio channels in the analog domain by subjective assessment;
- 2) testing of image dynamic resolution;
- 3) testing of compatible systems;
- 4) use of Show-scan material;
- 5) test method for EDTV into IDTV receivers;
- 6) use of pre-enhanced material for testing;
- 7) consider deleting the chroma resolution requirement in Section 6.2; and
- 8) source signal processing.

Meetings were held on 29 May, 6 July and 8 October 1990. Minutes of the meetings along with supporting documents are attached.

During the meeting of 29 May 1990, the Committee agreed to, henceforth, meet jointly and work in concert. The Committee also addressed items 1) through 6) above.

After a short discussion, the members agreed that testing of the audio channels in the digital

domain and objective testing in the analog domain provides important and useful information about bit rate errors, system robustness, and the characteristics of the system. However, these tests are not sufficient to determine system performance and must be supplemented by **subjective assessment** during the ATTC laboratory tests by an expert panel. The Committee, therefore, added to the attributes list in section II, "3.14 Subjective Assessment by an expert panel."

In response to a report that SS/WP4 Task Force on Priorities had raised the question of defining a minimum audio service, the members agreed that there should be no change to the present statement that the minimum service is that provided within current NTSC practices namely a stereo audio pair and a SAP channel.

The members did agree to add to the list under II, 3.11, Audio Security, a request for information about any scrambling techniques, as section **3.11.4 Scrambling Techniques**. The current section 3.11.4 would be renumbered as section 3.11.5.

The members considered the question of adding an attribute concerning response to "sudden cuts" and concluded that sections 3.9.4.7, 3.10.4.7, and 3.11.5.6 - "Any other artifacts" covered this item.

It was reported that SS/WP2 had decided that a dynamic zone plate test signal should be used to test dynamic resolution. The members concluded that the current attributes list sufficiently covers this item but noted that during objective testing there should be qualitative assessment of the effect on the image, as well as, quantitative assessment.

The members agreed that for the purpose of testing compatible systems, FCC Regulations, Part 73 should be applied as appropriate.

The members further agreed that Working Parties 1 and 2 should provided input to the Chair of SS/WP2 Task Force on Field Testing on the concerns the members have on that issue. The members agreed that there is a consensus within WP1&2 that while laboratory testing will produce much information on the performance characteristics of a system, that issues of multiple path and ATV/ATV interferences can only be tested in the field.

After discussion and consideration of the system testing requirements, the members reached consensus that a signal source of high spectral and temporal quality having no lag and exhibiting high quality MTF should be employed and that the Showscan system could provide such a source. The members recommended the use of 10 seconds, minimum of a such a source to provide a means of demonstrating growth potential and possibility of system adeptness to handle future high definition sources.

The members agreed that in the testing of any proponent system, sample IDTV receivers of the latest type should be included in the tests. The attributes list for Section II, 8. Consumer Equipment Issues was modified to include **8.3.4 IDTV Receiver Compatibility**.

IDTV and standard NTSC receivers should be observed for performance with and without line and/or frame comb filtering.

The members discussed what was meant by the term "enhancement" and agreed that adjusting camera response to being essentially flat is not considered enhancement. The members agreed that "non-enhanced" materials should be used and that all materials should be "normalized". Normalization means that camera generated images should be made to match as closely as possible electronically generated images within the bandwidth limitations of the system and that adjustments to camera generated images should not produce overshoots of over 5% with a goal of a maximum of 2% being urged. Further, no images should be used for testing which have been noise cored.

During the meeting of 6 July 1990, the Committee addressed item 7) above.

In response to item 7) the members stated: "We recognize the difficulty of obtaining the MTF curves requested in attribute 2.2 without obtaining internal signals from proponent equipment. Because of the importance of this attribute, indirect methods may be employed to quantify chroma response." It was pointed out that the value to be measured is for the smallest object that can be reproduced in color.

Attribute 6.4 **Susceptibility to Interference** was modified by adding the phrase "on picture and sound."

During the meeting of 8 October 1990, the Committee addressed item 8) above.

After discussion of item 8), the members agreed to modify the attributes list section 1.4 **Artifacts** and to add the following:

**1.4.1 The performance of ATV systems which have been spatially or temporally prefiltered including the use of motion detection.**

**1.4.2 The performance of ATV systems in response to input signals having random noise, clock noise, etc. superimposed on them.**

Some members present raised concerns about the ability of the ATTC to test these attributes considering costs and time involved. The Working Party decided that it was inappropriate for it to make a decision on this question, that the decision belonged elsewhere.

There was a discussion on the appropriateness of Washington as the field test site and on the need to have more than one such test site. There was consensus to add two more attributes to the list in **Section 6.9 Transmission Field Testing** as follows:

**6.9.1 At least one (1) location exhibiting average amount of difficulty, and**

**6.9.2 At least one (1) location considered "difficult".**

J.Kean was assigned the task of liaising with ATTC to provide specific descriptions on how each of the attributes would be tested.

It was reported that the field tests were designed to obtain data on system performance in response to multi-path delays, airplane flutter, weather conditions, and the like. The testing will also be directed to the UHF band. There are currently no plans to test in the low-band VHF spectrum. The broadcasters present believed that performance testing in both bands was an important issue.

29 Nov 90

FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE [ATS]  
PLANNING SUBCOMMITTEE  
WORKING PARTY 1 [PS/WP1]  
ON ATS TECHNOLOGY ATTRIBUTES AND ASSESSMENTS  
AND WORKING PARTY 2 [PS/WP1]  
ON ATS TEST PLANNING

DOCUMENTS LIST

<u>PS/WP1&amp;WP2#</u>	<u>DOCUMENT</u>
-060	Document List - 4th Report
-061	Draft Agenda, Meeting of 29 May 1990
-062	Letter from North American Philips of 14 Dec 89
-063	Letter from R.E. Wiley to J.A.Flaherty and I. Dorros of 10 May 1990
-064	Letter from Mark Richer to Faroudja (sample of letter sent to proponents), 14 May 1990
-065	Minutes: FCC ACATS PS/WP1 & PS/WP2 Joint Meeting of 29 May 1990
-066	Planning Subcommittee (PS) Statement of Work, Fourth Period, (PS-0075), 18 April 1990
-067	Letter from A.Godber, NBC of 25 April 1990
-068	Draft Agenda, Meeting of 6 July 1990.
-069	Minutes: 1st Meeting of PS/WP1&2 RF Specialist Group, 28 June 1990
-070	Minutes: FCC ACATS PS/WP1 & PS/WP2 Joint Meeting of 6 July 1990
-071	Draft Agenda, Meeting of 8 October 1990.
-072	Minutes: FCC ACATS PS/WP1 & PS/WP2 Joint Meeting of 8 October 1990
-073	Letter from J.Flaherty, PS Chair, to Messrs. Green and McMann, 7 September 1990.
-074	Letter from B.Dickens, CBS to R.McMann, 3 October 1990
-075	Letter from A.Godber, NBC to R.McMann, 8 October 1990
-076	Report of SS/WP2 AHG on Alternative Site Search, 10 September 1990
-077	Letter from R.Lee, Zenith to R.McMann, 8 October 1990
-078	Attributes/Systems Matrix, Revision 2
-079	Memo from R.McMann to M.Richer, Chair SS/WP2; 26 Nov 90
-080	Chairman's 4th Interim Report
-081	List of Participants

# Advisory Committee on Advanced Television (ATV) Service

PS/WP1&2-061

## JOINT MEETING NOTICE

FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE  
PLANNING SUBCOMMITTEE, WORKING PARTIES ONE AND TWO

29 MAY 1990  
10:00 AM

NBC  
30 ROCKEFELLER PLAZA  
MEZZANINE CONFERENCE ROOM C  
NEW YORK, NEW YORK

## DRAFT AGENDA

1. Call to order by the Chairman
2. Introductory Remarks
3. Approve agenda
4. Review of the fourth period work statement including:
  - a) audio test procedures
  - b) dynamic resolution test methodology
  - c) system field testing
5. Additional items for discussion:
  - a) use of showscan program material
  - b) develop test method for EDTV into IDTV receivers\*
  - c) use of pre-enhanced material
6. New Business
7. Adjournment

\* see North American Philips enclosure dated 12/14/89

NORTH AMERICAN PHILIPS CORPORATION

Date: 12/14/89

PHILIPS LABORATORIES

Jack Kean  
John W. Kean Associates  
25 Sunset Road C-13  
Old Saybrook, CT 06475

PS/WP1 & WP2 - 062

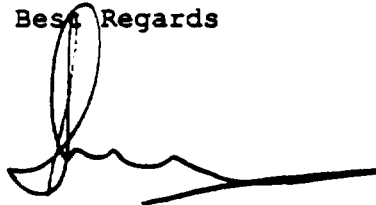
FAX: 203-388-6137

Dear Jack:

Enclosed is our initial recommendations for proper tests for 2-D and 3-D NTSC/EDTV prefiltering. In order to carry out complete recommendations the prefiltering system should be removed from specific ATV proponent hardware constrains and should carried out as a separate issue. Subsequently recommendations could be given to ATV, EDTV or IDTV system implementor on how to approach this properly.

We are willing to participate in the strategic performance evaluation of EDTV and IDTV schemes. We like to offer the generation of the required test patterns as well as support in defining specific test procedures and carrying out tests.

Best Regards



Mikhail Tsinberg  
Research Department Head  
Advanced Television Systems Department

Pre-filtering in EDTV Systems -  
Recommendation for Testing

The use of 2D and 3D filter techniques at EDTV encoders and decoders requires special test procedures to evaluate the system performance on all kinds of picture contents. In particular, studies of 3D or temporal processing like frame and field comb filters, have to employ reliable moving test patterns, which were not known in television measurement so far.

Test patterns for performance check of 2D and 3D filters:

1. Circular Zone Plate, monochrome [1, 2, 3]  
examples: VG zone plate generator, parameters: x2, y2, BTS Test D7, BTS H-1000, Tektronix TSG 1000
2. Circular Zone Plate, color  
examples: BTS Test D7, BTS H-1000
3. Elliptical Zone Plate, monochrome [3]  
examples: VG zone plate generator, parameters: y2, xt
4. Color patches  
examples: like color bars of Tektronix 1410 (in reversed mode), but with all different color transitions in each direction

All test patterns have to be available

- a) in stationary mode  
for checking of still picture performance
- b) with different (selectable) speeds of motion  
for evaluation of motion portrayal
- c) with different rates of acceleration  
for continuous scan of parameter spaces
- d) with adjustable luminance contrast  
for performance check of adaptive filters
- e) with adjustable color saturation (independently for each color difference signal)  
for performance check of adaptive filters

These test patterns allow to check visually (on the TV screen of the receiver) and by measurement (with oscilloscope):

- a) 3D luminance bandwidths
- b) 3D chrominance bandwidths
- c) cross color (or 'color moire') (in 3D terms)
- d) cross luminance (or 'dot patterns', subcarrier) (in 3D terms)
- e) additional artifacts, which may be caused
  - \*by certain adaptive implementations,
  - \*by additional subcarriers,
  - \*by compression and expansion techniques,
  - \*by companding and expanding techniques and
  - \*by certain filter implementations.

Most of these test patterns and their desirable flexibility and



adjustment parameters are not available as commercial products so far. Also, if available for some standards, no equivalent patterns, which cover the respective full range of resolution, are available for certain other standards.

For a generalized test procedure of EDTV systems, it is therefore recommended, to generate the above mentioned patterns by software and to provide them to the equipment under test by a real time video sequence system (DVS, VTE).

#### References

- [1] Weston, M. - A set of Time Varying Television Test Patterns, BBC Research Department Report 1980/9
- [2] Drewery, J.O. - The Zone Plate as a Television Test Pattern, BBC Research Department Report 1978/23
- [3] Teichner, D. - Three-dimensional Pre- and Post-Filtering for PAL TV Signals, ntz Archiv, Vol. 10 (1988), No. 6-8

December 13, 1989

Dr. -Ing. Detlef Teichner  
Project Leader IDTV/EDTV  
Philips Laboratories, Briarcliff Manor, NY

# WILEY, REIN & FIELDING

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PS/WP1 & WP2 - 063

RICHARD E. WILEY  
(202) 429-7010

May 10, 1990

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Joseph A. Flaherty  
VP & General Manager  
Engineering & Development  
CBS, Inc.  
555 W. 57th Street - 10th Floor  
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Irwin Dorros  
Exec. VP, Technical Services  
Bellcore  
290 W. Mount Pleasant Avenue  
Room 1 E 309  
Livingston, NJ 07039-2729

Dear Joe and Irwin:

As you may recall, at the meeting with proponents last week, Wayne Luplow of Zenith expressed concern that some duplication of effort between working parties in the Planning and Systems Subcommittees could arise in the development of test procedures for dynamic resolution and audio performance. The purpose of this letter is to ensure that such redundancy does not occur.

As you know, PS/WP's 1 and 2 are to define attributes and specify tests for assessing those attributes. SS/WP-2 is intended to develop test procedures based on those specifications. As stated in the Third Interim Report, I expect to have procedures for dynamic resolution and audio performance approved by the Subcommittees involved no later than July 31, 1990. Given the shortness of time available to develop these procedures, I recommend that your working parties meet jointly until this project is completed.

There is somewhat more time available to develop the field test procedures, however. Therefore, for this project I suggest that your working parties employ the standard sequential procedure (i.e., SS/WP-2 takes input from PS/WP-2). This approach will permit a full airing of the planning issues before work begins on the details of the measurement procedures. Obviously, the Planning Subcommittee must not be a source of delay if we are to complete the project by the

Messrs. Flaherty and Dorros  
Page 2

end of the calendar year. Therefore, I recommend that the Planning Subcommittee endeavor to complete its work by July 31, 1990. That should provide ample time for the Systems Subcommittee to complete its portion of the project.

If you have any questions regarding this approach, feel free to contact me.

Best personal regards.

Sincerely,



Richard E. Wiley  
Chairman, FCC Advisory Committee

14 MAY 90

May 14, 1990

PS/WP1 & WP2 - 064

Mr. Yves C. Faroudja  
President  
Faroudja Laboratories Inc.  
946 Benicia Avenue  
Sunnyvale, CA 94086

Dear Mr. Faroudja,

Systems Subcommittee Working Party 2 (SS/WP2, ATV System Test and Evaluation) has started work to formulate plans for both audio testing and field tests. The following questions support these activities as well as related activities in PS/WP1, PS/WP2 and SS/WP1. Please review and answer these questions as appropriate.

#### Audio

These questions are a follow up to Ben Crutchfield's letter of March 23, 1990 requesting technical information about your audio system. Please be sure to include information addressing the following specific questions:

- 1) Is the audio system analog or digital?
- 2) How many audio channels will the system provide? Will all of these channels be of equal performance?
- 3) For digital systems, how much bandwidth will be available for ancillary services such as captioning, teletext, and encryption addressing and control?
- 4) Does your system provide "Surround Sound" like processing?

If you have not already done, please send the information (concerning your audio system) indicated above to SS/WP1 Chairman Birney Dayton as soon as possible.

### **Transmission System Performance**

The following questions have been formulated by members of the SS/WP2 Task Force on Field Testing. Comments or typical NTSC transmission performance information is provided after each question. For further clarification, please contact Bob Unetich, President of ITS Corp. at (412 941-1500).

1. **What are the nominal signal level requirements to produce a grade B picture?**

(This will be helpful in doing basic path calculations and site selection.)

2. **Considering transmission systems (including transmitter, transmission line, filters and antenna systems), what are the likely effects (and what are the likely limits) of:**

- a) **Frequency Response Errors**

(NTSC: +/-1 dB, -2 dB at 4.18 MHz)

- b) **Group Delay Variation (Fast & Slow Variations)**

(NTSC: +/-100 ns over the video band)

- c) **Amplitude Non-linearities**

(NTSC: 5%)

- d) **Incidental Carrier Phase Mod. (ICPM)**

(NTSC: +/-3 degrees, relative to phase at blanking level)

- e) **Output System Return Loss (VSWR Effects)**

(NTSC: -20 dB over the 6 MHz channel, typically better at visual carrier)

- f) **Phase Stability (Jitter)**

(NTSC: 50 dB down in a 1 KHz bandwidth, 20 KHz from carrier as observed on a spectrum analyzer)

**g) System Reflection**

(NTSC: 3-5% amplitude)

**h) 60, 120, and 360 Hz AC Hum**

(NTSC: -50 dB, rms)

**i) Transient Response Errors**

(NTSC: 2% 2T Pulse and Bar)

- 3. What are the peak envelope power (P-E-P) and the average power ratios? How should power be measured?**

(What will a transmitter's P-E-P capability need to be relative to average conditions? NTSC is 1.68 X black level power + aural power.)

- 4. What is the likely "efficiency" of a transmitter plant? How is this likely to compare to an NTSC plant of similar coverage area?**

(A full power NTSC UHF station may consume 200 KVA or more depending on amplifier technology.)

- 5. If sound (aural) is separated, how is it diplexed?**

(Notch diplexing causes a large variation in video response and group delay.)

- 6. If there is substantial variation in amplitude and phase near full peak envelope power because of device nonlinearity, can the system performance be degraded?**

(Consider 20 degrees AM to PM and 57% (3 dB) reduction in small signal gain near full P-E-P.)

(NTSC transmitters typically require extensive precorrection to compensate. The precorrection may not be of sufficient bandwidth for HDTV.)

Mr. Faroudja  
May 14, 1990  
Page 4

7. Are there other transmission distortion levels or transmission parameters that should be specified?

(Are there special concerns because of bandwidth compression or other processing?)

Please respond to the questions concerning field tests to me in writing by June 15, 1990.

Sincerely,

*Mark Richer*

Mark S. Richer  
Chairman,  
Systems Subcommittee, Working Party 2

cc: Halfon Hamaoui, Faroudja Laboratories  
Irv S. Rosner, Rosner TV Systems  
Richard Wiley, Chairman, FCC Advisory Committee  
Irwin Dorros, Systems Subcommittee  
Joseph Flaherty, Planning Subcommittee  
Jim Tietjen, Implementation Subcommittee  
Thomas Stanley, Office of Engineering & Technology, FCC  
Richard Green, Cable Labs  
Craig Tanner, Cable Labs  
William Sawchuck, CRC  
Charles Rhodes, ATTC  
Peter Fannon, ATTC

## Advisory Committee on Advanced Television (ATV) Service

PS/WP1&WP2-065

JOINT MEETING OF  
FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE [ATS]  
PLANNING SUBCOMMITTEE  
WORKING PARTY 1 [PS/WP1]  
ON ATS TECHNOLOGY ATTRIBUTES AND ASSESSMENTS  
AND WORKING PARTY 2 [PS/WP2]  
ON ATS TEST PLANNING

1. The meeting was called to order by WP1 Chairman, Ren McMann at approximately 10:15 a.m., on 29 May 1990, in Conference Room C, NBC, 30 Rockefeller Plaza, New York, NY 10112.

Those present were:

Ren McMann, Chairman, WP1  
Stan Baron, Vice-Chairman, WP1 (NBC)  
Max Berry (Faroudja Research)  
Joseph Flaherty, Chairman, PS (CBS)  
Hugo Gaggioni (Sony)  
Jim Gaspar (CBS)  
Alan Godber (NBC)  
Charles Heuer (Zenith)  
Jack Kean (ConnETV)  
Bob McFarlane (Philips Labs)  
Irv Rosner (Faroudja Research)  
Greg Thagard (Showscan)

2. Introductory Remarks:

The Chair read the statement of work to be accomplished as contained in document PS-0075, 18 April 1990 (PS/WP1&2-066, attached).

J. Flaherty explained that the charge to the Working Groups results from issues raised in the ACATS Third Interim Report. The statement of work has also been reviewed by Mr. Wiley with the proponents.

J. Flaherty reported that one of the ACATS current critical path items is obtaining necessary funding to support the subjective testing program. The funding problem has been made more complicated since PSI has notified Mr. Wiley that they no



longer wished to be considered for testing and that MIT has not forwarded its funding as yet.

J.Flaherty further reported that Tektronix has announced a delay in delivering the format converter. The new schedule anticipates delivery in "mid to late September".

J.Flaherty read from Mr.Wiley's letter of 10 May 1990 (see PS/WP1&2-063, attached). J.Flaherty urged that PS/WP1 and PS/WP2 continue to meet jointly and work in concert.

In response to a question about where field testing fitted into the schedule, J.Flaherty reported that a plan will be developed by the end of 1990 and then a means of funding the tests will need to be developed. The FCC sees field testing as paramount in importance.

J.Flaherty distributed a copy of the letter sent by Marck Richer to Yves Faroudja requesting certain additional information about the characteristics of his system (see PS/WP1&2-064, attached). A similar letter was sent to all precertified proponents:

3. The draft agenda (PS/WP1&WP2-061, attached) was accepted.

4a. Audio Test Procedures

After a short discussion, the members agreed that testing of the audio channels in the digital domain and objective testing in the analog domain provides important and useful information about bit rate errors, system robustness, and the characteristics of the system. However, these tests are not sufficient to determine system performance and must be supplemented by **subjective assessment** during the ATTC laboratory tests **by an expert panel**. [Added to the attributes list (doc. PS/WP1-054) was section II, **3.14 Subjective Assessment by an expert panel.**]

H.Gaggioni reported that SS/WP4 Task Force on Priorities requires clarification of certain issues and raised the question of defining a minimum audio service. The members agreed that there should be no change to the present statement that the minimum service is that provided within current NTSC practices namely a stereo audio pair and a SAP channel.

The members agreed to modify the list where measurement of Audio/Video delay is called for to add Audio/Audio delay. This effects items: **3.6, 3.9.4.3, 3.10.4.3, and 3.11.4.3, 4.2**

The members did agree to add to the list under II, 3.11, Audio Security, a request for information about any scrambling techniques, as section **3.11.4 Scrambling Techniques**. The current section 3.11.4 would be renumbered as section 3.11.5.

The members considered the question of adding an attribute concerning response to "sudden cuts" and concluded that sections 3.9.4.7, 3.10.4.7, and 3.11.5.6 - "Any other artifacts" covered this item.

4b. Dynamic Resolution Test Methodology

J.Kean reported that SS/WP2 has decided that a dynamic zone plate test signal will be used to test dynamic resolution. The members concluded that the current attributes list sufficiently covers this item but noted that during objective testing there should be qualitative assessment of the effect on the image, as well as, quantitative assessment.

4c. System Field Testing.

The members agreed that for the purpose of testing compatible systems, FCC Regulations, Part 73 should be applied as appropriate.

The members agreed that Working Parties 1 and 2 should provide input to the Chair of SS/WP2 Task Force on Field Testing, J.Cohen, on the concerns the members have on this issue. The members agreed that there is a consensus within WP1&2 that while laboratory testing will produce much information on the performance characteristics of a system, that issues of multiple path and ATV/ATV interferences can only be tested in the field. C.Heuer, J.Kean and L.Libin plus one other individual representing the cable industry were appointed as subcommittee to prepare an overview statement for presentation to J.Cohen.

5a. Use of Showscan Program Material

After discussion and consideration of the system testing requirements, the members reached consensus that a signal source of high spectral and temporal quality having no lag and exhibiting high quality MTF should be employed and that the Showscan system could provide such a source. The members recommended the use of 10 seconds, minimum of a such a source to provide a means of demonstrating growth potential and possibility of system adeptness to handle future high definition sources. (See letter from A.Godber, PS/WP1&2-067, attached).

5b. Develop Test Method for EDTV into IDTV Receivers.

The discussion on this issue was based on questions raised in the letter of 14 December 1989, from North American Philips (see doc. PS/WP1&2-062, attached).

The members agreed that in the testing of any proponent system, sample IDTV receivers of the latest type should be included in the tests. The attributes list for

Section II, 8. Consumer Equipment Issues was modified to include **8.3.4 IDTV Receiver Compatibility**. IDTV and standard NTSC receivers should be observed for performance with and without line and/or frame comb filtering.

5c. Use of Pre-Enhanced Material for Testing.

The members first discussed what was meant by the term "enhancement" and agreed that adjusting camera response to being essentially flat is not considered enhancement. The members agreed that "non-enhanced" materials should be used and that all materials should be "normalized". Normalization means that camera generated images should be made to match as closely as possible electronically generated images within the bandwidth limitations of the system and that adjustments to camera generated images should not produce overshoots of over 5% with a goal of a maximum of 2% being urged.

No images should be used for testing which have been noise cored.

6. New Business

The members agreed that PS/WP1 and PS/WP2 should continue to meet jointly.

The next joint meeting was scheduled for 6 July 1990 at 10:00 am at CBS, 555 W.57th St., New York City.

7. The meeting was adjourned.

TV

## Advisory Committee on Advanced Television (ATV) Service

PS/WP1 &amp; 2-066

Doc. No. PS-0075Date April 18, 1990

### Planning Subcommittee Statement of Work Fourth Period

This document is a revision of PS-0073 that has incorporated new and revised action items resulting from the Steering Committee meeting of April 10, 1990.

#### PSWP-1 and PSWP-2

- o Coordinate with SSWP-2 to ensure that the ATTC has complete audio and data channel test procedures by July 1, 1990.
- o Develop a test methodology for assessment of ATV transmission system dynamic resolution. Coordinate with SSWP-2 to ensure that a procedure is submitted to the ATTC by July 31, 1990.
- o Define the scope and objectives for conducting field tests and solicit guidance from the FCC on this matter. Coordinate with PSWP-4 on cable related aspects of field testing. Solicit proponents for characteristics of ATV transmitters and coordinate this effort with PSWP-3. Provide information obtained from these activities to SSWP-2 Task Force on Field Test Procedures.

#### PSWP-3

- o Develop preliminary channel allotment plans and assignment options based on inputs from the System Subcommittee and WP-3 developed planning factors.
- o Examine the benefits of collocation of ATV transmitters.
- o Develop necessary tools to characterize interference between NTSC and ATV, and recommend mutual interference reduction measures such as collocation.
- o Complete work on identifying the availability of spectrum to support ATV broadcast auxiliary operations (including satellite, STL and ENG). Identify alternative auxiliary support strategies such as fiber optics.
- o Develop a strategy to reduce data obtained from impairment testing to obtain meaningful evaluations of ATV transmission systems.

- o Coordinate with the Implementation Subcommittee on the evaluation of the economic implications versus the technical implications of adopting various simulcast allocation plans.
- o Coordinate with PSWP-1 and PSWP-2 to obtain transmitter characteristics from ATV system proponents.

#### PSWP-4

- o Review existing documentation of recommended multipoint specifications from EIA and the ATSC T3S2 specialist group. If appropriate, approve the multipoint specifications and submit a report to the Chairman of the Advisory Committee.
- o Research the signal format specification plans for future DBS systems to determine if they will be compatible with terrestrial broadcast ATV systems.
- o Coordinate with PSWP-1 and PSWP-2 to ensure that the field test plan encompasses end-to-end testing of cable systems.

#### PSWP-5

- o Estimate costs to convert present NTSC stations to ATV simulcast operation basing equipment costs on a competitive market place.
- o Develop a family of market penetration projections in conjunction with SSWP-3.
- o Investigate the implications of ATV policies for industrial development and international trade.

#### PSWP-6

- o Complete the camera tests for 1050/59.94/2:1, 787.5/59.94/1:1 and 525/59.94/1:1 formats.
- o Test the telecine to be used for transfer of 35mm, 24fps film.
- o Conduct the source material production methods demonstration. Priority is to demonstrate 4 identical serially shot sequences and sequences shot in 1125/60/2:1 converted to 1050/59.94/2:1 and 525/59.94/1:1.
- o Reshoot, digitize and approve still test materials. Obtain rights to test materials in writing.
- o Revise and approve the still test material.
- o Complete production of the dynamic source material and have it ready for testing no later than September 1, 1990

#### PSWP-7

- o Seek funding for proposed audience research studies. Monitor the activities of SSWP-2 Task Force on Field Test Procedures for possible equipment to be used for audience testing.



PS/WP1 & 2-067

Room 1600W,

April 25th, 1990

Mr. Renville McMann,  
Chairman of PS/WP1, ACATS,  
(Telephase Labs)  
963, Oenoke Ridge Rd.,  
New Canaan, Connecticut 06840

Dear Ren,

As Chairman of the Ad Hoc Group on Production Planning, which is putting together the Motion Source Materials for PS/WP6, our committee has felt for some months that a source of moving images is needed which has higher performance than that which is currently available with Advanced Television hardware, particularly cameras and telecines. It was felt that because the transmission system for Advanced Television should be designed to be viable for many years, as was NTSC, that the chosen system must be expected to accomodate improvements in source devices over the years of its use.

It was therefore felt that such a source of test images is a necessary attribute to assure that the chosen system is tested adequately.

Members of the Ad Hoc Group developed the concept of a super quality image which could be created now, using 65mm Showscan film run at 60 frames per second. This combination would produce a very high horizontal and vertical resolution and remove the motion artifacts associated with 24 frames per second film. A further development of shooting the film using a "360 degree" shutter was considered, but was thought to be difficult to achieve in the time frame available.

The image transfer device would be the BTS camera, permitting output in all of the production formats required. In order to eliminate a significant deficiency of the photoconductive telecine technique, it would be necessary to transfer the film one frame at a time, using the integration capabilities of the camera, to thereby remove lag.

An improvement in the film stability by the use of register pins has also been considered, and can be incorporated in the Showscan telecine.

The hardware for this proposal is being constructed for Zenith Electronics, and will become a high definition tool for their use. It will also be provided to the Ad Hoc Group as part of Zenith's contribution to the Ad Hoc Group's work.

As a matter of information, it should be noted that it is our intention to also use this telecine for the 35mm 24 frame per second film transfers required, using the BTS camera.

The Ad Hoc Group requests that your Working Party consider the use of this super quality image source as a required attribute for the testing of the proponent transmission systems.

It is our earnest desire to make sure that the chosen transmission system is adequate to the task of transmitting high definition production images, and we feel that an image with performance higher than that of today's cameras and film chains is required, to assure this capability.

If desired, an inspection of the hardware proposed can be arranged for members of your committee.

We await your consideration of this matter.



Alan S. Godber  
Chairman Ad Hoc Group on Production Planning,  
ACATS, PS/WP6.

ASG  
4/24/90  
apswp6a7/3-4

Advanced

TV

**Advisory Committee on  
Advanced Television (ATV) Service**

PS/WP1&2-068

**JOINT MEETING NOTICE**

**FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE  
PLANNING SUBCOMMITTEE, WORKING PARTIES ONE AND TWO**

**6 JULY 1990  
10:00 AM**

**CBS  
RM.161, 10TH FLOOR  
555 WEST 57TH STREET  
NEW YORK, NEW YORK**

**DRAFT AGENDA**

1. Call to order by the Chairman
2. Approve agenda
3. Approval of Minutes of 29 May 1990 (PS/WP1&2-065)
4. Report of Subcommittee on Field Testing (C.Heuer & J.Kean)
5. Report on ATTC Subjective Testing (A.Godber)
6. Other Old Business
7. New Business
8. Adjournment





## Advisory Committee on Advanced Television (ATV) Service

DRAFT

### MINUTES

First meeting PS/WP-1&2 RF Specialist Group (teleconference)  
June 28, 1990

The meeting was called to order by Chairman Kean at 4:00PM  
Participating: Jules Cohen, Richard Green, Charles Heuer, Brian James, Jack Kean and Louis Libin.

The agenda was approved without change. It was agreed that the Planning Subcommittee RF Specialist Group should move quickly to avoid delaying related work in the Systems Subcommittee.

The committee discussed the following:

That interference (ATV to NTSC, ATV to ATV, NTSC to ATV) is an important criteria for selection of systems for field testing. Data derived from objective laboratory tests relating to interference should play a principal role in the selection of systems to be recommended for field tests. Although important, quality judgements based on objective laboratory tests should not be used to rule out a system for field testing. It is anticipated that at least two systems shall be recommended for field testing.

It was pointed out that field testing will necessarily be conducted with either existing or prototype equipment somewhat inferior to that available once ATV transmission begins. This will limit the results that can be obtained. Despite this, there is no substitute for proper field testing. The digital nature of some systems may cause laboratory coverage predictions to need field validation. Jules Cohen believes ATV signal comparison with collocated NTSC facilities could yield predictive data applicable to other locations. The Specialist Group urges the attempt to develop such data as part of any field testing program.

In conformance with the March 10 FCC ruling, planning for EDTV system testing was deemed unnecessary at this time.